

during this period STDs had shown a rapid and substantial increase in eastern Europe.⁸

The incidence of co-infection with gonococci and chlamydia (7.3% and 14.4% for men and women, respectively) was not greater compared with that in other countries.⁶

Furthermore, serial surveys provided the useful information that prostitutes and especially people (clients), who had sexual contacts with them, shared the greatest proportion of gonorrhoea cases as a consequence of the Greek law which obliged this occupational group, but not the clients, to be "followed up" monthly. The hotel workers, who might indirectly relate to the previous occupational group, were found as the third most affected occupational group whereas the seafarers, who could directly relate to the above occupational groups in Greece and other foreign countries, were also highly affected.⁹⁻¹¹ Homosexuals and the users of illicit drugs were similarly affected.

However, people with better education and higher standard of living such as workers in schools, nurseries, food retailers and wholesalers shared a low proportion of the positive cases in this study.¹²

The high percentage of early diagnosed cases (which were asymptomatic) among the case patients suggested that this preventive measure reduced transmission, since asymptomatic men accounted for a disproportionate share of STD transmission and were unlikely to seek medical attention on their own.^{10, 11}

Thus, an approach, such as the present study, might be recommended for people recruited for examination. Furthermore, the possibility of incorporating other cities in this programme could also offer a valuable nationwide profile of STDs.

Contributors: SG followed up the gonorrhoea cases; KHS analysed the positive cases and wrote the manuscript; CG enrolled a number of the participants of the programme and found the recent references; GAK did the laboratory tests.

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Prevalence of *Chlamydia trachomatis* infections in women attending six women's healthcare units in Kaunas, Lithuania

Introduction

Knowledge about the morbidity caused by *Chlamydia trachomatis* in eastern Europe is still insufficient. Reporting systems of sexually transmitted diseases and diagnostic tools, especially for the diagnosis of chlamydial infections, are still suboptimal,¹ epidemiological studies are costly, and national resources devoted to STD prevention and control are small.

The aim of this study was to investigate the prevalence of *C trachomatis* infections in Lithuanian women, attending six main healthcare units in Kaunas, the second biggest Lithuanian town (500 000 inhabitants) and to learn about risk factors related to genital chlamydial infections.

Materials and methods

Women (n=1008) attending four gynaecological outpatient clinics and two antenatal clinics in Kaunas (Lithuania) between November 1999 and December 2000 were enrolled.

Study participants were given a standardised questionnaire concerning social status, sexual behaviour and contraceptive habits, medical and sexual history, and presence of genitourinary symptoms. Pelvic examination was carried out using a standardised examination protocol.

Direct microscopy of the vaginal wet mounts, methylene blue stained urethral and cervical smears was done "bedside." The direct immunofluorescence (DIF) test (Syva MicroTrak *Chlamydia trachomatis* Direct

Specimen Test, Trinity biotech, Ireland) was used for chlamydia antigen detection.

Results

The median age of the population tested was 25 (mean age 26.1) years. Of the patients who answered the question about the reason of visiting, 513 (59.2%) came for symptom evaluation, 300 (34.6%) for a regular check up, and 53 (6.1%) for a test of cure. There was no significant difference in the reason to attend different clinics.

The overall prevalence of *C trachomatis* infection was 8.4%. The highest prevalence of *C trachomatis* was observed in women below 19 years of age (17.4%), in women 20-40 years decreasing to 6.1-7.9%. In women older than 40 years, there was seen to be a further decrease to 2.9%.

There was a significant difference between the medical facility and the prevalence of *C trachomatis* infections. Thus, *C trachomatis* positive patients were: 6.7% of the women consulting OPGC I; 4.5%, OPGC II; 4.0%, OPGC III; 11.3%, OPGC IV; 9.5%, AC I; and 13.5%, AC II, respectively (p<0.001).

Figure 1 demonstrates the association between the percentage of young people (below 19 years of age) attending a certain health facility and the prevalence of *C trachomatis* infection.

Trichomonas vaginalis was detected in the wet mounts of 2.9%, candida in 14.3%, and bacterial vaginosis in 14.1% of the women tested. *Neisseria gonorrhoeae* was detected in 0.4% of the cervical smears.

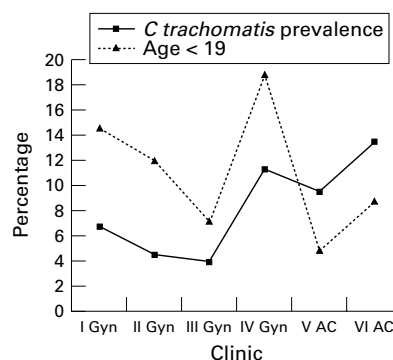


Figure 1 Prevalence of *C trachomatis* infections and percentage of women aged below 19 years in 1008 women attending six women's health units in Kaunas, Lithuania.

Smokers (n = 243; 24.3%) were significantly more often chlamydia positive compared with non-smokers (13.2% v 7%, OR 2.0, 95%CI 1.3-3.2; p<0.005). Smokers had significantly often more than two sexual partners during the last 2 months compared with non-smokers (41.3% v 23.6%, OR 2.3, 95%CI 1.2-4.2). Significantly more smokers had had their first sexual intercourse at below 18 years of age (p<0.001).

The median age at sexual debut was 18 years (mean 19 (SD 2.7)). The median number of partners during the last 6 months was 1 (range 1-2), during 12 months 1 (1-7), during their lifetime, 1 (1-50). Significantly more women who started their sexual life

before 18 and had more than one sexual partner during the last 6 or 12 months had a chlamydial infection.

The reason for attending, marital status, education, occupation, past or present genitourinary symptoms, a history of reproductive tract infections, day of the menstrual cycle, child birth, legal abortions or miscarriages did not affect the incidence of *C trachomatis* infection.

Approximately one fourth of the women could not answer the question about their sexual partner's genital symptoms, if any, or if he was tested for any reproductive tract infection, neither did they know if he had ever had any infection.

C trachomatis positive women more often had cervical discharge (44% *v* 22%, OR 2.7, 95% CI 1.7–44.; *p*<0.000), which was mostly mucopurulent (37% *v* 10%, OR 3.0, 95% CI 1.3–6.1, *p*<0.000).

C trachomatis positive women significantly more often had concomitant infections with *T vaginalis* (7.1% *v* 2.5%, OR 2.9, 95% CI 1.1–7.1, *p*=0.02) and *N gonorrhoeae* (2.4% *v* 0.3%, OR 7.3, 95% CI 1.0–45.1, *p*=0.02), as well as bacterial vaginosis (21.2% *v* 13.5%, OR 1.7, 95% CI 1.0–2.9, *p*=0.05) and cervicitis (52.9% *v* 10.5%, OR 9.6, 95% CI 6.0–15.5, *p*=0.00). There was no significant difference in the number of candida infections or the finding of urethritis between *C trachomatis* positive and negative women.

Discussion

In the present study we found the prevalence of *C trachomatis* infection to vary between six different healthcare units from 4% to 13.5%. This difference was not caused by differences in reasons for visiting but by the proportion of visitors below 19 years of age. This group had a prevalence five to eight times greater than that of the following 5 years age groups. In a previous study conducted on the female population in Klaipėda,² the prevalence peak was at 24 years of age. This exemplifies that when tailoring prevention programmes one has to be aware of the age specific prevalence.

In this study smoking was associated with chlamydial infection. Probably smoking itself was not a risk factor, but smoking women significantly more often had more than two sexual partners during the last 6 and 12 months. They also became sexually active earlier—that is, smokers belong to a group with “risky behaviour,” a fact also noted by others.³

The presence of current symptoms or a history of reproductive tract infections did not influence the presence or absence of *C trachomatis* infections in the present study. This could reflect the women's awareness of symptomatology in general.

Cervical discharge, especially of a mucopurulent character,^{4,5} is a well known marker for having genital chlamydial infection. These signs were significantly more often expressed in *C trachomatis* positive women in this study.

Since most STDs have common risk factors, anyone with one infection diagnosed is at higher risk of having several infections.⁶ This is also supported by the present study.

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Contributors: MD initiated, designed and supervised the study, worked on this paper, and conducted statistical analysis; AH co-supervised the study and was working on the manuscript; RB was helping with the study design, its technical performance, data computing and interpretation; TS and VJ were helping with the study design, its laboratory performance, and interpretation; DM, RJ, VP, JB, and MG were responsible for sample collection and evaluation at the study site.

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